इंटरनेट मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

"जानने का अधिकार, जीने का अधिकार"
Mazdoor Kisan Shakti Sangathan
"The Right to Information, The Right to Live"

"पुराने को छोड नये के तरफ"
Jawaharlal Nehru
"Step Out From the Old to the New"

IS 14132 (1995): Walk-Through Metal Detector for Use in Weapon Detection [LITD 8: Electronic Measuring Instruments, Systems and Accessories]

"ज्ञान से एक नये भारत का निर्माण"
Satyanarayan Gangaram Pitroda
"Invent a New India Using Knowledge"

Act Number 22 of 2005
The Indian Parliament
RIGHT TO INFORMATION

Made Available By
Public.Resource.Org

"ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है"
Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

BLANK PAGE

BRUTUM FULMEN
IGNORANTIA JURIS NON EXCUSAT
PROTECTED BY COPYRIGHT

IS 14132 : 1995
(Reaffirmed 2000)

भारतीय मानक

शस्त्र संसूचन में उपयोग के लिए खोजी धातुसंसूचक — विशिष्टि

Indian Standard

WALK-THROUGH METAL DETECTOR FOR USE IN WEAPON DETECTION-SPECIFICATION

UDC 351·746·3 : 623·368·2

© BIS 1995

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

January 1995 **Price Group** 6

Electronic Test Measuring Instruments, Systems and Accessories Sectional Committee, LTD 21

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Electronic Test Measuring Instruments, Systems and Accessories Sectional Committee had been approved by the Electronics and Telecommunication Division Council.

The object of this standard is to establish performance requirements and methods of test for walk-through metal detectors for use in weapons detections.

This standard is based on NILECJ-STD-0601.00-1974 'NILECJ standard for walk through metal detectors for use in weapons detection', of issued by National Institute of Law Enforcement and Criminal Justice, USA.

In reporting the results of a test or analysis made in accordance with this standard, if the final value, observed or calculated is to be rounded off, it should be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values (revised)'.

Indian Standard

WALK-THROUGH METAL DETECTOR FOR USE IN WEAPON DETECTION — SPECIFICATION

1 SCOPE

1.1 This standard covers the performance requirements and test methods for walk-through metal detectors for security application such as airports, industrial houses, defence and similar sensitive installations and for use by law enforcing agencies.

These detectors are intended to indicate the presence of metal, in excess of a preselected amount, carried on a person passing through a specific space. For most security applications, the emphasis is on the ability to detect knives and metallic weapons.

2 REFERENCES

2.1 The Indian Standards listed below are necessary adjuncts to this standard:

IS No.	*Title*
1570 (Part 4) : 1988	Schedules for wrought steels: Part 4 Alloy steels (alloy constructional and spriog steels) with specified chemical composition and mechanical properties *(first revision)*
1570 (Part 5) : 1985	Schedules for wrought steels for general engineering purposes : Part 5 Stainless and heat-resisting steels (*second revision)*
2004 : 1991	Carbon steel forgings for general engineering purposes (*third revision)*
9858 : 1981	Safety requirements for electronic measuring equipment

3 TERMINOLOGY

3.1 Clean Tester

A person who performs a test pass while carrying no significant metal. Significant metal includes the following : keys, coins, watches, wallets, purses, shoes with metal arch or heel support, belt buckles, jewellery, pens, mechanical pencils, metal frame eye-glasses, hearing aids, cardiac pacemakers, metallic surgical implants, undergarment support metal, metal zippers, metal buttons, etc.

3.2 Detection Space

The region where passage of metal is intended to be detected.

3.3 Discrimination

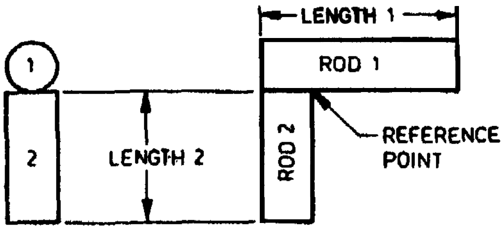
Although discrimination is ideally the ability of a detector to distinguish between weapons and other metal, discrimination for this standard is the ability to detect quantities of metal large enough to be a weapon while ignoring smaller quantities.

3.4 Reference

The specific point on a test object, identified in Tables 1 and 2 which is passed through a test location during a test pass.

Table 1 Shape A — Test Objects

(*Clauses* 3.4 *and* 6.2.1)



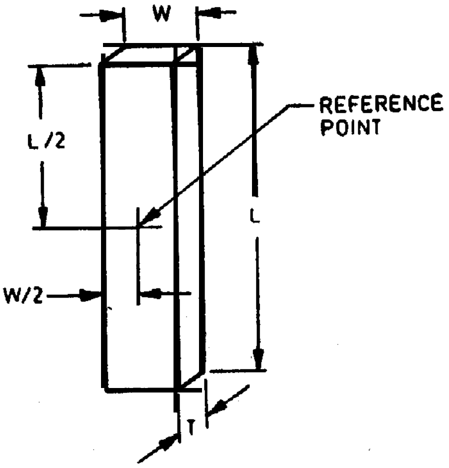
Shape-A Number	Length 1 mm ± 1·6	Length 2 mm ± 1·6
1	25·0	—
2	50·0	—
3	50·0	25·0
4	75·0	25·0
5......	75·0	50·0
6	100·0	50·0
7......	125·0	50·0
8... ..	150·0	50·0
9	150·0	75·0
10	175·0	75·0
11......	175·0	100·0
12	200·0	100·0
13	325·0	100·0
14	225-0	100·0

NOTE — Use block (Fig. 4) to held rods.

All rods are 25·4 ± 0·4 mm in diameter. Type AM (magnetic) rods are cold finished, annealed steel as per IS 1570 (Part 4) : 1988. Type AM (non-magnetic) rods are cold finished, annealed stainless steel as per IS 1570 (Part 5) : 1985.

Table 2 Shape B — Test Objects

(*Clauses* 3.4 *and* 6.2.1)



Material : Carbon Steel, Hot Rolled Sheet, as per IS 2004 : 1991*

Width (W) : 19’0 ± 0·8 mm

Thickness (T) : 1’52 ± 0’15 mm

Length (L) : See list below

Shape-B Number	Length mm
1 ...	25’0
2 ...	50·0
3 ..	7.5’0
4	100’0
5	125’0
6 ...	150’0
7	175’0

*Carbon steel forgings fix general engineering purposes (*third* revision).

3.5 Test Location

A specific point relative to the floor and detector center line, as shown in Fig. 1, through which a test object moves during a test pass.

3.6 **Test Object Designation**

A code in which the first letter indicates shape, a second letter indicates magnetic (M) or nonmagnetic (N) material and a numeral indicators size.

3.7 **Test Pass**

Passage of a person carrying a test object through the detection space.

3.8 **Throughput Rate**

The number of people per minute who pass through the detection space.

3.9 **Figure of Merit (FOM)**

The FOM is a measure of the detector’s response to a test sample carried by a clean tester versus the response to a clean tester alone.

4 CLASSIFICATION

4.1 Security Level

The detection capabilities and certain general characteristics determine a detector’s suitability for use at a specific security level. A particular detector may meet the requirements for more than one security level by adjustment of controls or replacement of components as specified by the manufacturer.

4.1.1 *Descriptions of Security Levels*

Designation:

1) Monitoring is primarily for deterrence. Threat is low. Person may carry normal pocket items and may have hand-carried items. Throughput must be high and false alarm rate very low. False alarms may be produced by large metal objects moving outside the detection space.

   Typical application : routine building surveillance.

2) Person may carry normal pocket items. Throughput must be high and false alarm rate low. False alarms may be produced by large metal objects moving outside the detection space. Will operate in indoor environments.

   Typical application : building surveillance.

3) Alarms are expected from large or from a number of pocket items which have not been removed. False alarms may be produced by large metal objects moving outside the detection space. Will operate in indoor environments.

   Typical applications : jails, courtrooms, airports, oil installations.

4) All normal pocket items must be removed before monitoring if alarms on nearly all persons are to be avoided. Careful selection of the detector location may be required. Any nearby metal object must be stationary during monitoring. Large moving metal objects at a considerable distance may produce alarms. Allowable environment may be restricted.

   Typical application : jails; prisons; high-security courtrooms; nuclear, space, and defence installations.

5) All metal from clothing must be eliminated. Careful selection of the detector location may be required. Any nearby metal objects must be stationary during monitoring. Large moving metal objects at a considerable distance may produce alarms. Allowable environment may be restricted.

   Typical application : Prisons, customs, special nuclear material detection.

4.2 Level **of Performance**

4.2.1 *Basic Class*

A basic class detector meets the basic requirements identified as such in this standard for the various security levels.

4.2.2 *Augmented Class*

An augmented class detector meets certain supplementary requirements, identified as augmented requirements in this standard, in addition to the basic requirements. These augmented requirements are desirable for most applications, but may add to the cost of the detector.

5 REQUIREMENTS

5.1 Ambient Temperature

Detector shall operate properly over the ambient temperature range of at least (a) —10°C to + 50°C for industrial application, and (b) — 25°C to + 50°C for special applications.

5.2 Alarm Indicator

The detector shall have at least one inaudible on-off alarm indicator and shall have a control to selectively deactivate any audible alarm. At least one inaudible visual Indicator shall be easily perceptible to an operator 6·0 m from the detector walkway in a normal ambient light conditions. This requirement may be satisfied by a remote indicator, if this indicator is easily perceptible from a distance of 1·2 m. The manufacturer shall specify the alarm indicator to be used for detection for each specific security level. Relay with one changeover switch may be provided if required by user as an optional feature.

5.3 **Controls**

Any control accessible to the operator shall have a dial which allows reacting the control with sufficient precision to meet all detection requirements. Any control with numerical calibrations corresponding directly to the security level designations may be hidden from view in normal operation. The manufacturer shall specify the sottings or a calibration procedure for all controls for each specific security level. As a part of the set-up procedure, one control corresponding to each zone may require an adjustment procedure based on calibration test objects, provided no more than 5 minutes is required by an operator familiar with the procedure to complete each setting.

5.4 **Walkway Structure**

The structure defining the detection space shall have an opening between 0·66 to 0·8 mm. The width of the opening shall be fixed by a structural number, unless the walkway components are intended for custom permanent installation at a separation distance marked on the component. The detection structure shall be rigid enough to meet the detection test requirements when mounted on a hard or carpeted floor. The height from the walkway floor to any top crossmember shall be between 2·0 to 2·2 m.

5.5 **Detection Performance**

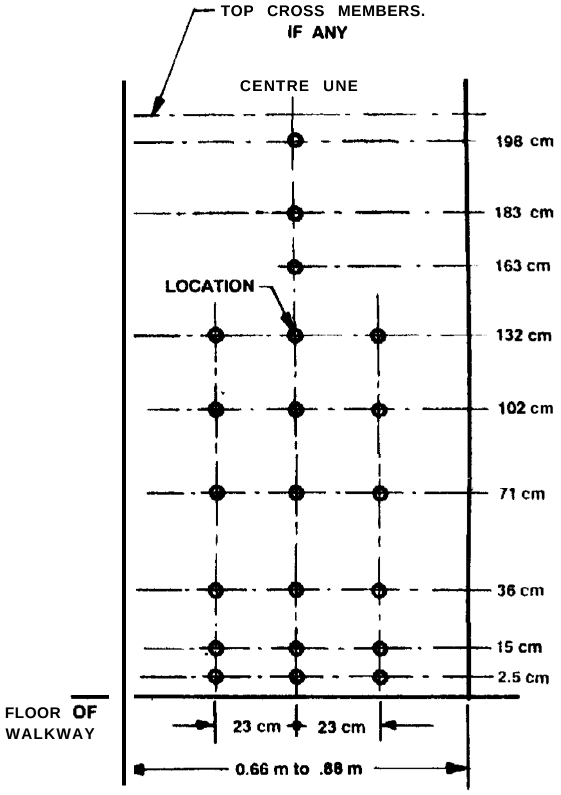
The detector shall meet the detection requirement for each security level at which it is required to operate. When tested in accordance with 6.2 each test object listed in Table 3 under required detection for that security level shall cause an alarm for each of the first four test passes in 6.2.2 through each specified location. Conversely, each test object or the clean tester listed under forbidden detection shall not cause an alarm for any of the first four test passes through each specified location. For convenience, basic and augmented detection requirements for all security levels are listed by test objects and characteristic in Annex A.

5.6 **Stability**

The detector shall meet the detection requirements for each required security level, as listed in Table 3 under required detection and forbidden detection, after a warmup period of 15 minutes, and again after a period of 2½ hours when tested in accordance with 6.3.

5.7 Walking Speed

The detector shall meet the detection requirements for each required security level for walking speedo of 0·45 m per second and 1·8 m per second when tested in accordance with 6.4.



0 -TEST LOCATION, POSITION TOLERANCE ± 5.0 cm EXCEPT 2.5 cm LEVEL ± 2.5 cm VIEWED FROM TEST - PASS STARTING

FIG. 1 TEST LOCATIONS

5.8 Throughput Rate

The detector shall alarm for all test passes using the test objects listed under required detection in Table 3, and shall not alarm for any test passes using the test objects (or clean tester) listed under forbidden detection when tested for each required security level in accordance with 5.5 at the throughput rates listed below:

Security Level	*Throughput Rate* (People per minute)
1.	15
2.	10
3.	6
4.	4
5.	4

5.9 Power Line Voltage and Frequency

Line-powered detectors shall operate at power line voltages of 240 ±10 percent volts at 50 hertz, when tested for each required security level in accordance with 6.6.

5.10 Time Varying Generated Magnetic Field

When measured for each required security level in accordance with 6.7, the peak-to-peak time varying generated magnetic field shall be no greater than the value given as a function of frequency in Fig. 2, and the waveform shall consist of continuous unmodulated sinusoids within the frequency range given in that figure.

5.11 Near-Field Moving Metal

Metal in motion shall not cause an alarm at distances from the detector greater than 1·2 m for security levels 1 and 2 and 1·8 m for security levels 3, 4 and 5, when the detector is tested in accordance with 6.8.

5.12 Interaction

The detector shall not produce any alarm as a result of the operation of a second detector of the same model at a separation distance of 1·0 m, operating from the same power line outlet. The second detector shall not affect the required or forbidden detection at any of the required security levels as measured in 6.9. Simple field adjustments to meet the requirement are allowed.

5.13 Operation on Steel-Reinforced Floors

The detector shall meet the detection requirements for each required security level listed in Table 3 under required detection and forbidden detection, when the detector is mounted and tested on a simulated steel-reinforced floor in accordance with 6.11.

Table 3 Detection Performance Requirements

(*Clauses* 5.5, 5.6, 5.8, 6.3, 6.4, 6.5, 6.6.2 *and* 6.9)

Security Level	Basic Requirements				Additional Augmented Requirements			
	Required Detection		Forbidden Detection		Required Detection		Forbidden Detection	
	Test Object	Location	Test Object	Location	Test Object	Location	Test Object	Location
1	AM 9	15 to 132 L, C, R	AM4	15 to 132 L, C, R	AM9	163C, 198C		
			AN4	15 to 132 L, C, R	AM9 Orientation 3	36 to 132 L, C, R		
			B6	2·5 L, C, R				
2......	AM7	15 to 132 L, C, R	AM3	15 to 132 L, C, R	AN7	15 to 132 L, C, R 163C 198C		
			AN3	15 to 132 L, C, R	AM7	163C 198C		
			B6	2·5 L, C, R	AM7 Orientation 3	36 to 132 L, C, R		
					AN7 Orientation 3	36 to 132 L, C, R		
3.	AM5	15 to 132 L, C, R	AM1	15 to 132 L, C, R	AM5	163C, 198C		
			AN1	15 to 132 L, C, R	AN5	15 to 132 L, C, R		
			B6	2·5 L, C, R	AN5	163C 198C		
					AM5 Orientation 3	36 to 132 L, C, R		
					AN5 Orientation 3	36 to 132 L, C, R		
4.......	AM3	15 to 132 L, C, R 163C, 198C	Clean Tester					
	AN3	15 to 132 L, C, R						
	B6	2·5 to 132 L, C, R 163C, 198C						
	AM3 Orientation 3	36 to 132 L, C, R						
5.......	AM1	15 to 132 L, C, R 163C 198C	Clean Tester					
	AN1	15 to 132 L, C, R						
	B1	2·5 to 132 L, C, R 163C, 198C						

NOTE — *See* Tables 1 and 2 for test object designations. The test object shall be held in the orientations given in Tables 4 and 5. Test locations within detection space are given in Fig. 1.

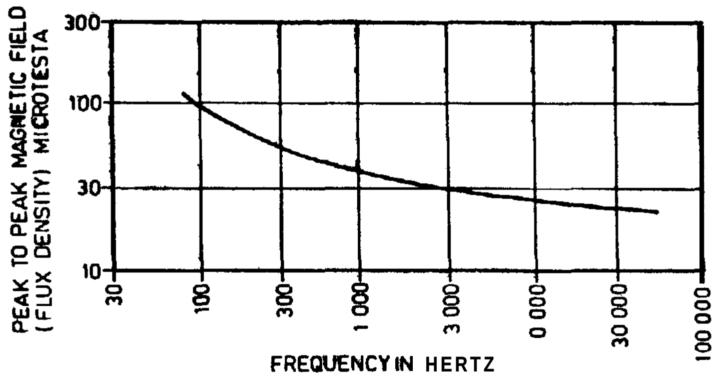


FIG. 2 ALLOWABLE GENERATED MAGNETIC FIELD FOR CONTINUOUS UNMODULATED SINUSOIDAL WAVEFORMS

5.14 Battery Condition

If batteries are used in the detector, the manufacturer shall provide a means of determining that the batteries require replacement before the detection performance is affected.

5.15 General Safety

The metal detector should not be used for frisking persons having implanted pacemakers.

5.16 **Electrical** Safety

The detector shall comply with the requirements of IS 9858 : 1981.

5.17 Data Supplied by the Manufacturer

An operator's manual shall be supplied by the manufacturer or distributor with each detector. This manual shall clearly state the instructions for operation and maintenance of the device and shall include the following information:

Alarm indicator type or types (for example, bell, light, siron, etc)

Security level or levels at which the detector can be adjusted to operate

Dimensions of floor space occupied by the walkway

Height of the walkway

Overall height of the walkway

Height of walkway opening

Width of a walkway opening at walkway floor

Minimum width of walkway opening between 0·36 m and 1·52 m above walkway floor

Overall dimensions of any component which is separate from walkway

Weight of any component which is separate from walkway

Power requirements

Operating ambient temperature range

Excitation frequency (required for installation of the two metal detectors side by side).

5.18 **Marking**

5.18.1 The following information shall be marked on the metal detector indelibly and externally visible:

a) Serial number, and model designation;

b) Name and trade-mark of the manufacturer; and

c) Country of manufacture.

5.18.2 The metal detector may also be marked with the Standard Mark.

5.18.2.1 The use of the Standard Mark is governed by the provisions of Bureau of Indian Standards Act, 1986 and Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of 'Indian Standards.

6 TEST METHODS

6.1 General Test Conditions

6.1.1 *Installation*

The detector shall be installed and set up in accordance with the manufacturer's instructions unless they contradict any instruction in this standard. The floor area under the detector shall be free of metal for all tests except 6.10. The distance between any metal object and the closest part of the detector shall be not less than 3 m on the ends of the walkway structure, and not less than the distances given below on each side. A walkway ramp or footbridge shall not be considered part of the detector for this purpose.

Security Level	*Minimum Side Clearness* m
1, *2 and* 3......	1·8
4....... I.........	2·4
5................	3·6

6.1.2 *Environment*

At the time of the tests the ambient temperature shall be between 18°C and 38°C; the temperature shall not vary over a range greater than 5°C, the relative humidity shall be between 45 percent and 75 percent; there shall be no extraneous moving metal in any direction (including above and below) from the detector within five times the side clearance distances given in 6.1.1 (if alarms are caused by moving metal at any distance, the testing shall be interrupted).

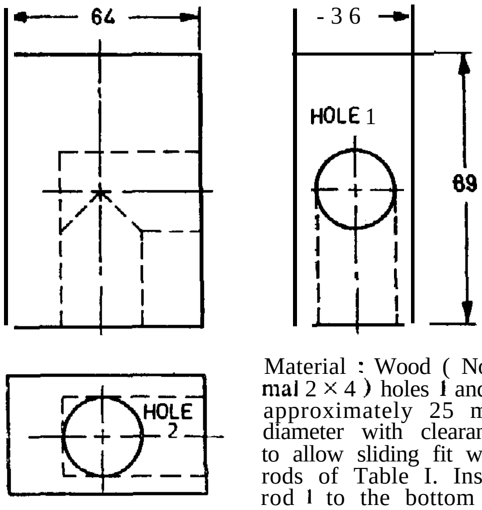
NOTE — The metal detectors may be tested, in other than standard test conditions, as per agreement between the user and the manufacturer.

6.1.3 *Preparations*

If the detector under test is line powered, supply voltage shall be between ± 1 percent of rated voltage at rated frequency. The electrical power at nominal levels shall be applied to the detector for a minimum of 15 minutes. Any detector specified by the manufacturer shall be performed. Any controls shall be set to the positions specified by the manufacturer for operation at the required security level.

6.2 Detection Performance Test

The detection performance is evaluated by test passes made by a clean tester carrying a specific test object through a specific test location in the required orientation.



Material : Wood (Normal 2 × 4) holes 1 and 2 approximately 25 mm diameter with clearance to allow sliding fit with rods of Table I. Insert rod 1 to the bottom of hole I, then insert rod 2 in hole 2.

All dimensions in millimetres.

FIG. 3 BLOCK FOR HOLDING RODS IN SHAPE A

6.2.1 *Test Objects*

Test objects of shapes A, B as described in Tables 1 and 2 shall be of the materials and sizes indicated. Shape A simulates handguns, shape B simulates knives or shoe arch supports.

6.2.2 *Procedure*

A clean tester shall hold a test object with its reference point at a position corresponding to the test locations shown in Fig. 1 and in the orientations specified by Tables 4 and 5. For the 15 cm and 36 cm heights, the test object should be attached to the leg with a non-metallic belt, strap or holder. Starting from a position 3 m from the detector, a test pass is made by walking without hesitation, at a speed as close as possible to 1·2 m per second, to a point 3 m beyond the detector. Note whether detection occurred. Unless a preferred direction of travel is stated by the manufacturer, another test pass may be made on the return part of a round trip. The time interval in seconds between passes shall not be shorter than 60 divided by the throughput rate requirement of 5.8. Each test object is carried on four test passes at each specified location. Repeat for each test object listed under required detection and forbidden detection at the locations specified in Table 3 for the required security level. If no test objects are listed under forbidden detection, the clean tester shall make 40 test passes.

6.3 Stability Test

After the detector power has been off for at least four hours, apply power to the detector. After 15 minutes and again after 24 hours have elapsed repeat the detection test (6.2) using the test objects of type AM listed under required detection and forbidden detection in Table 3 for each required security level. (Entries in Table 3 for type AM test objects in orientation 3 are not to be included in these tests.) For single indication detectors only location 40C shall be tested. For zone indication detectors, one test location as given in Fig. 2, as close as possible to the centre of each zone specified by the manufacturer, shall be tested.

6.4 Walking Speed Test

Repeat the detection test (6.2) using the test objects of type AM listed under required detection and forbidden detection in Table 3 for each required security level with the following modifications. The average walking speed shall be as close as possible to 0·45 m per second (approximately 13·3 s for a test pass). The test shall be repeated again with an average walking speed as close as possible to 1·8 m per second (approximately 3·3 s for a test pass). Only location 40C shall be tested. (Entries in Table 3 Type AM test objects in orientation 3 are not to be included in these tests).

Table 4 Test Object Orientations as Viewed from Starting Position of Test Pass

(Clause 6.2.2)

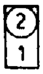
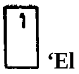
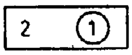
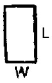
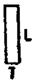
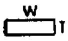
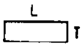
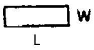
Orientation Number		
1.	Shape A	
2.	Shape A	
	Rod 2 to tester’s right for all passes if round-trip is used. Alternate right and left if single direction of travel.	
3	Shape A	
4.	Shape B	
5.	Shape B	
	Shape B	
7.	Shape B	
8.	Shape B	

Table 5 Orientation of Test Object at Each Test Location

(*Clause* 6.2.2)

			Height (cm)
	3,7		108
	3,7		183
	3.7		163
1,5	2,4,8	1,5	132
1,5	2,4,8	1,5	102
1,5	1,5	1,5	71
1,5	1,5	1,5	36
1,5	1,5	1,5	15
6	6	6	2’5
3	C	R	

NOTE — See Table 4 for orientation number.

6.5 Throughput Rate Test

Successive test passes, in one direction, shall be made by two clean testers. One shall carry the test object of type AM, listed under required detection (Table 2) at location 40C; the second shall carry the test object of type AM listed under forbidden detection (if any), at location 40C. Test passes shall be made at 1·8 m per second walking speed. The time interval in seconds between test passes shall be as close as possible to 60 security level. A total of six test passes shall be made by each tester for each required security level. (Entries in Table 3 for type AM test objects in orientation 3 are not to be included in these tests).

6.6 Power Line Voltage Test

6.6.1 *Equipment*

Line power shall be applied to the detector through a variable autotransformer having nominal output of 0 to 280 volts and current rating as required by the detector under test. Monitor the output voltage of the autotransformer with a voltmeter having ±2 percent accuracy or better in the range 200 to 250 volts ac.

6.6.2 *Procedure*

Adjust the voltage at the detector to 200 volts. After at least one-half hour, check the voltage and readjust if necessary. Then immediately perform the detection test (6.2) at test location 4CC only, using the test objects of type AM listed under required detection and forbidden detection in Table 3 for each required security level. Increase the voltage to 250 volts, and at least one hour later readjust the voltage if necessary and again perform the detection test (6.2) at test location 40C for the AM type test objects listed under required detection and forbidden detection in Table 3 for each required security level. (Entries in Table 3 for test objects in orientation 3 are not to be included in these tests).

6.7 Time **Varying Generated Magnetic Field Test**

6.7.1 *Equipment*

The time varying generated magnetic field shall be measured using a field search coil which has 250 ± 5 turns of insulated magnetic wire (O.D. 0·19 ± 0·01 mm) close wound in a single layer on a 50·8 mm diameter nonmetallic form. The approximate winding length is 50·8 mm, The search coil shall be connected to an oscilloscope via 3 m of cable with the shield connected only at one end to the oscilloscope case. The oscilloscope shall have a band width of at least 500 kilohertz, an input resistance of at least 100 kΩ, and an input capacitance of not greater than 100 picofarads. The most sensitive vertical deflection range shall be such that 50 millivolts causes a vertical deflection of at least one centimetre, and the fastest horizontal sweep range shall be 10 microseconds per centimeter or faster. Both vertical deflection and horizontal sweep shall be calibrated to ± 5 percent accuracy or better.

6.7.2 *Procedure*

For each required security level, probe the detection space to determine the location and orientation of the coil which produces maximum oscilloscope deflection in the region between 2·5 cm and 1·73 m above the walkway floor and 15 cm or more from any side wall of defining structural member. Locations are with respect to the centre of the coil. If the oscilloscope display is sinusoidal, record the peak-to-peak deflection in millivolts and the period in milliseconds. If the wave-shape is nonsinusoidal, record the approximate wave-shape. For sinusoidal wave-forms compute the peak-to-peak magnetic field in microtesla as 0·31 VT, where V is the peak-to-peak coil output in millivolts, and T is the period in milliseconds.

6.8 **Near-Field Moving Metal Test**

6.8.1 *Equipment*

The metal test panel shall be carbon steel as per IS 2004 : 1991 with sheet metal 36·0 cm by 48·0 cm ± 0·3 cm, 0·318 cm thick.

6.8.2 *Procedure*

Hold the metal panel vertical with one hand at the centre of each long side. Hold the panel against the chest with the centre 1·40 ± 0·13 m above the floor. Stand on the centreline of the walkway, facing the opening about 1·8 m (6 feet) from the closed part of the detector. Rapidly thrust the arms forward to full extension keeping the panel vertical. Observe the alarm indicator. Repeat the test at various distances to determine the greatest distance from the walkway at which each of three successive thrusts produce an alarm. Measure the distance from the panel in the extended position to the close at part of the walkway structure other than ramp or footbridge, to the nearest 0·1 m. Repeat the test at the side of the detector perpendicular to the direction of travel. Jf the walkway has significant length, perform the test opposite the centre and edge of a walkway side. Repeat the entire test at each required security level.

6.9 Interaction Test

A second detector of the same model shall be located adjacent to the first with the walkways parallel and a centreline separation of 6·1 m. Both detectors shall be operated from the same power line outlet and at the same security level. The second detector shall be prepared as in 6.1.3. The alarm indicator of the first detector shall be observed while the following tests are performed on the second detector : switch the power on and off at lo-second intervals for four on-off cycles; make four test passes with an object which causes detection, simultaneously with a test pass of the AM test objects listed under required detection in Table 3 at location 400 of the first detector; repeat the preceding test with the AM test object listed under forbidden detection at location 400 of the first detector. (Entries in Table 3 for test objects in orientation 3 are not to be included in these tests). Repeat the entire test at each required security level.

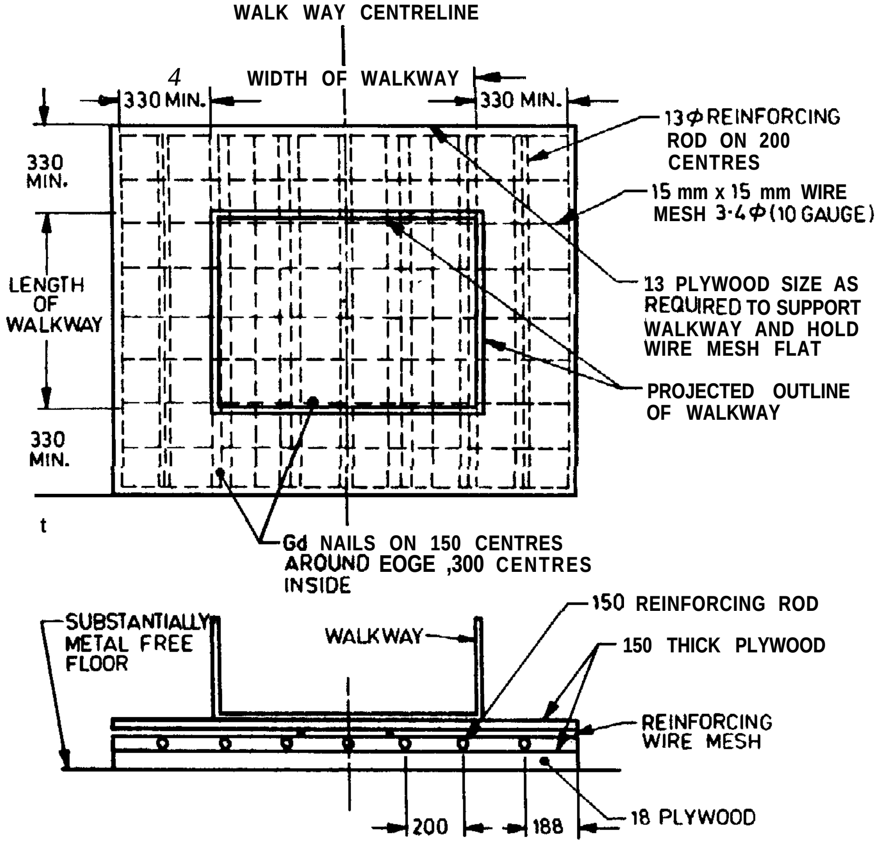
6.10 **Test for Operation on a Steel-Reinforced Floor**

6.10.1 *Equipment*

The simulated steel-reinforced floor shall be as shown in Fig. 4. The reinforcing wire shall be approximately 3·4 mm diameter number 10 gauge steel wire, nominal 15 cm square mesh welded at intersections. The reinforcing rods shall be nominal 13 mm diameter steel. The floor width shall be at least equal to the overall width of the walkway plus 0·6 m and the floor length at equal to the length of the walkway (parallel to the centerline of the walkway) plus 0·6 m. Install the detector walkway on top of the simulated steel-reinforced floor with the walkway centerline parallel to the reinforcing rods. The plywood shall be secured to the building floor or shimmed as necessary to provide a stable platform for the detector walkway.

6.10.2 *Procedure*

Repeat the detection test (6.2) for the following test objects and locations from Table 3 under required detection and forbidden detection for the required security levels: test objects of type AM at location **40C,** all test objects listed with test locations at the 2·5 cm or 15 cm heights. (Entries in Table 3 for test objects in orientation 3 are not to be included in these tests).


WALK WAY CENTRELINE
4
WIDTH OF WALKWAY
330 MIN.
330 MIN.
330 MIN.
LENGTH OF WALKWAY
330 MIN.
t
13ϕ REINFORCING ROD ON 200 CENTRES
15 mm x 15 mm WIRE MESH 3·4ϕ (10 GAUGE)
13 PLYWOOD SIZE AS REQUIRED TO SUPPORT WALKWAY AND HOLD WIRE MESH FLAT
PROJECTED OUTLINE OF WALKWAY
Gd NAILS ON 150 CENTRES AROUND EOGE ,300 CENTRES INSIDE
SUBSTANTIALLY METAL FREE FLOOR
WALKWAY
150 REINFORCING ROD
150 THICK PLYWOOD
REINFORCING WIRE MESH
18 PLYWOOD
200
188

All dimensions in millimetres.

FIG. 4 SIMULATED STEEL-REINFORCED FLOOR

ANNEX A

(*Clause* **5.5**)

SUMMARY OF DETECTION REQUIREMENTS

√ Required for basic and augmented classes
x Forbidden for basic and augmented classes
+ Required for augmented classes
– Forbidden for augmented classes

Test Object	*Security Levels*				
	1	2	3	4	5
All test locations, from 15 to 133 inches, L, C, **R:**					
AM1		x			√
AM3		x		√	
AM4	x				
AM5			√		
AM7		√			
AM9	√				
AN1			x		√
AN3		x		√	
AN4	x				
AN5			+		
AN7		+			
B2					√
B6				√	
Head sensitivity, Locations 163C and 198C:					
AM1					√
AM3				√	
AM5			+		
AM7		+			
AM9	+				
AN5			+		
AN7		+			
B2					√
B6				√	

Test Object	*Security Levels*				
	1	*2*	*3*	*4*	5
Foot sensitivity, locations 2·5 L, C, R:					
B2					✓
B6	X	X	X	✓	
Horizontal weapon (orientation 3). Locations 36 to 152 L, C, R:					
AM3				✓	
AM5			+		
AM7		+			
AM9	+				
AN3				✓	
AN5			+		
AN7		+			